

DETAILED ACTION

The amendment filed 10/07/2008 has been received, entered and carefully considered.

The following information provided in the amendment affects the instant application:

1. Claims 1-16 have been amended.
2. New claim 17 has been added.
3. Remarks drawn to claim objections and rejections under 35 USC 112, first and second paragraphs, obviousness-type double patenting and 103 and a Declaration under 37 CFR 1.132 by Dr. Peltonen.

Claims 1-17 are pending in the case.

The following rejections of record in the previous Office action have been overcome in view of applicants' amendment and arguments:

- a) The objection to Claims 5 and 8
- b) The rejection Claims 15-16 under 35 U.S.C. 112, first paragraph for lack of enablement for the preparation of a dispersion using any biopolymer in general.
- c) The rejection of Claims 1-16 under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.
- d) The rejection of Claims 15-17 are rejected on the ground of nonstatutory obviousness-type double patenting over claims 1-2 and 19 of '903 patent is withdrawn.
- e) The rejection Claims 1-16 under 35 U.S.C. 103(a) as being unpatentable over Hassmaa et al (WO 97/49762) in view of Yoshioka et al (Mol. Cryst. and Liq. Cryst. 2000, 353, 59-73) has been overcome in view of applicants arguments and the Declaration of Dr.

Peltonen, which shows that in the process of the closest prior art, Yoshioki et al, replacement of octenyl succinic anhydride with succinic anhydride does not form a dispersion as instantly claimed.

f) The rejection of Claims 1-16 under 35 U.S.C. 103(a) as being obvious over Peltonen et al (US 6,780,903). The instant application and the '903 patent were, at the time of the invention of the instant application was made, both owned by Valtion Teknillinen Tutkimuskeskus. Accordingly, the '903 patent is disqualified as a reference.

The following new rejections are made of record.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 1-8 are rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for polymer dispersion containing cellulose acetate and starch acetate and a method of preparing the said dispersion, does not reasonably provide enablement for a dispersion containing any hydrophobic polysaccharide and its method preparation. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the invention commensurate in scope with these claims.

A conclusion of lack of enablement means that, based on the evidence regarding each of the factors below, the specification, at the time the application was filed, would not have taught

one skilled in the art how to make and/or use the full scope of the claimed invention without undue experimentation.

- (A) The breadth of the claims
- (B) The state of the prior art
- (C) The level of predictability in the art
- (D) The amount of direction provided by the inventor
- (E) The existence of working examples
- (F) The quantity of experimentation needed to make or use the invention based on the content of the disclosure.

The breadth of the claims

Claim 1 is drawn to a polymer dispersion containing a hydrophobic polysaccharide. The terms, hydrophobic polysaccharide, are broad and are seen to include numerous polysaccharides.

The state of the prior art

The examiner notes that the art cited by the applicants (Yoshioka et al, Mol. Cryst. And Liq. Cryst., 2000, 353, 59-73) teaches the preparation of compositions comprising polysaccharides (cellulose acetates, ethers) and plasticizers. However, no other polysaccharide has been mentioned or used in examples for making polymer dispersions. The prior art is seen to be limited in its use of the polysaccharide.

The level of predictability in the art

There is not seen sufficient data to substantiate the dispersions as instantly claimed using any polysaccharide since all polysaccharides as encompassed by the said terms in instant claim 1 may not be compatible with other agents like plasticizers and dispersion agents. Thus the formation of dispersions as instantly claimed is highly unpredictable.

The amount of direction provided by the inventor

The instant specification is not seen to provide enough guidance that would allow a skilled artisan to extrapolate from the disclosure and the examples provided to enable the preparation of the dispersion using any polysaccharide. The specification does not provide a definition for the terms hydrophobic polysaccharide. The polysaccharides referred to in the specification are starch and cellulose only and these are not representative of all of the polysaccharides encompassed by the broad recitation in instant claim 1.

The existence of working examples

The working examples set forth in the instant specification are drawn to compositions comprising esters of starch and cellulose. Despite these examples there is little enabling disclosure for dispersion comprising biopolymers encompassed by the general dictionary meaning. Cellulose and starch are not representative of all biopolymers. Applicant has given working examples using cellulose and starch only and is therefore not entitled to claim compositions and method of preparation comprising any other polysaccharide.

The quantity of experimentation needed to make or use the invention based on the content of the disclosure

Indeed, in view of the information set forth, the instant disclosure is not seen to be sufficient to enable the hydrophobic polymer dispersions as instantly claimed. One of ordinary skill in the art would have to carry out the process in order to determine which among the myriad of hydrophobic polysaccharides that are encompassed by the said

terms would give the dispersions as instantly claimed. Undue experimentation is seen as necessary.

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-8 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1 recites the terms, 'hydrophobic polysaccharide'. In the absence of the specific definition of the hydrophobic polysaccharides of this invention, the identity of said polysaccharides would be difficult to define and the metes and bounds of the said polysaccharides applicants regard as the invention cannot be sufficiently determined because they have not been particularly pointed out or distinctly articulated in the claim(s). This also applies to instant claim 8 for the recitation of the term derivatives.

Claims that depend from a rejected base claim that is unclear/indefinite are also rendered unclear/indefinite and are rejected for the same reasons.

Double Patenting

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re*

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Goodman, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claims 15-17 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-2, 13, 15 and 19 of U.S. Patent No. 6,780,903 ('903). Although the conflicting claims are not identical, they are not patentably distinct from each other because:

Instant Claim 1 is drawn to a method of preparing a hydrophobic polymer comprising mixing a biopolymer, plasticizing agent, dispersion admixtures and water, heating the mixture and diluting the paste-like composition obtained with water, wherein the plasticizing agent is at least 10% by weight and is an alkenyl succinic anhydride. Dependent claim 16 recites limitations drawn to conducting steps (a) and (b) simultaneously at an elevated temperature claim 17 recites specific starch and cellulose derivatives to be used in the method.

Claims 1-2 of '903 are drawn to a method of hydrophobic polymer comprising the same steps. Claims 13 and 15 are drawn to the use of specific starch derivatives and claim 19 of '903 is drawn to the types of plasticizers.

Claims 1-2, 13, 15 and 19 of '903 differ from the instant claims in that the instant claims employ a cellulosic biopolymer and alkenyl succinic anhydride as the plasticizer. However, it

would have been obvious to one of ordinary skill in the art at the time the invention was made that any plasticizer and a cellulosic biopolymer could be successfully employed in the method of '903 and vice versa.

In determining the differences between the prior art and the claims, the question is not whether the differences themselves would have been obvious, but whether the claimed invention as a whole would have been obvious. Obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either explicitly or implicitly in the references themselves or in the knowledge generally available to one of ordinary skill in the art. "The test for an implicit showing is what the combined teachings, knowledge of one of ordinary skill in the art, and the nature of the problem to be solved as a whole would have suggested to those of ordinary skill in the art." *In re Kotzab*, 217 F.3d 1365, 1370, 55 USPQ2d 1313, 1317 (Fed. Cir. 2000). In the instant case, '903 teaches performing each of the steps applicant claims and also teach in the disclosure starch and its derivatives are interesting materials for making biodegradable polymers. One of ordinary skill in the art would readily recognize that the scheme taught by '903 could be employed in the instant method using cellulosic biopolymers too. The use of known members of classes of reagents in reactions to effectuate the same type of modifications taught in the prior art is not seen to render the instantly claimed method unobvious over the art. Once the general reaction has been shown to be old, the burden is on the applicant to present reason or authority for believing that a closely related starting compound or a closely related plasticizer would take part in or affect the basic reaction and thus alter the nature of the product or the operability of the process and thus the unobviousness of the method of producing

it. One of ordinary skill in the art would expect the process of '903 to work using cellulosic biopolymers because of structural similarity. '903 also teaches the use of any renewable natural resource that is biodegradable and compostable. One of ordinary skill in the art knows that cellulosic polymer is also biodegradable and because of its structural similarity would give a similar dispersion to be used as lamination adhesives on cellulose based products ('903-col. 2, lines 10-46). One of skill in the art would also look for dispersion comprising other biopolymers similar to starch that would have enhanced properties and benefits as taught by '903.

Conclusion

1. Claims 1-8 and 15-17 are rejected.
2. Claims 9-14 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ganapathy Krishnan whose telephone number is 571-272-0654. The examiner can normally be reached on 8.30am-5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Shaojia A. Jiang can be reached on 571-272-0627. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Ganapathy Krishnan/

Examiner, Art Unit 1623

/Shaojia Anna Jiang/

Supervisory Patent Examiner, Art Unit 1623